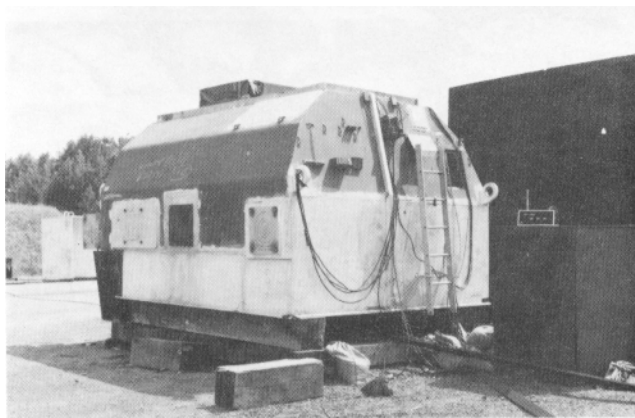


Fragments

FROM COMRADES IN ARMS



Fire extinguisher for FAASV

The US Army Test and Evaluation Command is testing an automatic fire extinguisher system (AFES) for the Army's M992 field artillery ammunition support vehicle (FAASV). The aluminum-armored FAASV is designed to carry up to 93 rounds of 155-munition to support the M109 self-propelled howitzer. If the FAASV is hit by an enemy projectile that ignites flammable fluids in the vehicle, test engineers want to ensure that the AFES extinguishes the fire in less than 250 milliseconds and that it does not needlessly discharge its fire extinguishing agent. The AFES has four cylinders which contain Halon 1301 (bromotrifluoromethane). If the contents of the first two cylinders do not extinguish the fire, the second pair of cylinders are activated.

The Army has signed contracts to purchase 174 FAASVs which should reach artillery units in Europe by mid-1985. In addition to fire protection, the FAASV gives its crewmen protection from small arms fire, shrapnel, and nuclear, chemical, and biological weapons. The FAASV also provides artillery batteries with an ammunition supply vehicle that has the speed and mobility to keep pace with the M109 howitzer.

A variation of the FAASV, the XM1050, is undergoing test and evaluation to serve M110 8-inch howitzer units. The XM1050 will carry 48 rounds of 8-inch ammunition.

Diesel generator sets

Two contracts have been awarded for three each 15-, 30- and 60-kilowatt signal-suppressed, diesel-engine-driven (SSDED) generator sets. The sets will be tested at Fort Belvoir, Virginia.

Existing sets can be easily located by the enemy because of the uniqueness of their acoustic and thermal infrared signatures. The functions of a combat system, its echelon of deployment, and its level of importance on the battlefield may also be determined through analysis of signature emissions. SSDED generator sets will have suppressed acoustic and thermal infrared signatures and be nuclear hardened. Electrical power quality equivalent to present Department of Defense standard generator sets and increased reliability are required.

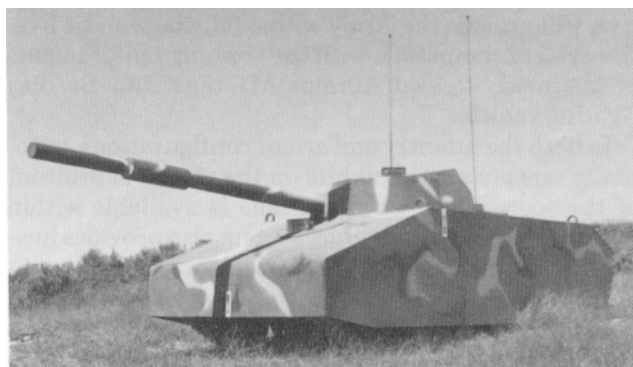
If the SSDED generator sets prove to be suitable and cost-effective, they will be type-classified and will replace current generator sets in the acquisition cycle.

Armored target vehicle

A full-sized armored moving target vehicle that can be operated by two crew members and withstand direct hits from .50-caliber ball ammunition is undergoing extensive field testing.

The hybrid vehicle, which sports a Soviet-look-a-like shell atop a US M551 Sheridan combat vehicle chassis, is built to almost exactly the same scale as the Soviet T62 tank. The armor-plated shell is attached to the chassis with four large mounting pins—two in the front and two in the back. Approximately two and a half tons of additional weight were added to the normal combat loaded weight of the M551 in this conversion to a target vehicle.

The interior of the target tank has a nylon ballistic lining that muffles noise and reduces flying fragments if penetration of the outer shell occurs. The target vehicle is equipped with escape hatches; two radios; a hit detector, which alerts the crew when they have been hit; an automatic fire detection and extinguishing system; and a submarine-type periscope.



Armored target vehicle.



The target system in action for infantry training. (Sperry Corporation Photo)

Remoted target system

The Army recently awarded the Sperry Corporation a \$25.7 million contract to produce a remoted target system (RETS) which uses moving targets for armor and infantry live-fire exercises.

The ranges will be configured for either infantry or armor training, depending on the needs of a particular Army installation. Range training officers can program the system to simulate many combat scenarios through a central computer control console.

The infantry targets are three-dimensional and are made of high-density polyethylene, which can withstand up to 2,000 hits before replacement. The targets move at variable speeds up to eight miles per hour.

The armor moving target carrier is capable of moving a full-scale, two-dimensional plywood tank target at speeds up to 25 miles per hour. The remoted target system, combined with the armor moving target carrier, will provide the Army with a fully automatic live-fire system compatible with the training requirements of the newly-fielded Abrams M1 tank and Bradley fighting vehicle.

In both the infantry and armor configurations, automatic sensors record all hits on the target. A printout of the scores for each firing lane is available within minutes. The remoted target system also provides hostile fire and muzzle flash simulation during night training exercises.

The Sperry Corporation has also developed a portable version of the fixed range which uses a radio controller and stationary and

moving targets. A number of portable systems have already been delivered to US Army units and to the Egyptian government.

Spall liners improve survivability

As more and more lethal anti-vehicle ordnance is developed, Army combat vehicles demand a proportionally increased level of survivability to counter these threats. The spall liner system provides this survivability with an interior lining behind the vehicle's conventional armor on the sides and roof.

Spall liners not only protect the crew members from direct hits but also provide crew protection against stowage fires and secondary projectiles hurled about the crew compartment.

Logically an effective spall liner material would be similar to the material used in seat backs on advanced aircraft. However, to be sure, candidate materials have been tested on an armored vehicle subjected to high-explosive and kinetic energy attacks. The results of such tests including attacks by TOW (HEAT) bomblets, 30-mm GAU-8 rounds, 14.5-mm API rounds, .30-caliber AP rounds, and 20-mm FSP rounds showed that a semi-rigid panel of laminated Kevlar 29, spaced approximately 16 inches from the side armor of an M113 armored personnel carrier, met system requirements for direct-hit crew survivability. A similar panel could be bolted and cemented directly under the roof of the vehicle to protect against an artillery threat. The potential of spall liners as a survivability enhancement to new systems appears to warrant continued study and consideration by developers of all mobile weapon systems. (Kathy G. Janoff, FMC)



Commander's cupola and secondary armament of the International Turret. (Emerson Electric Company photo)

International turret

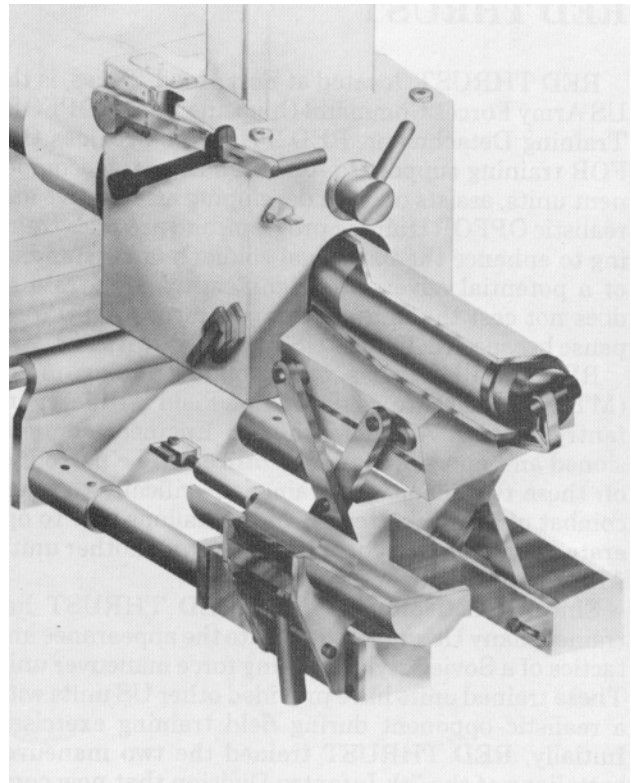
A well-emplaced, tactically situated firing unit is an essential component of a mobile ground force; however, to remain effective, it must survive. Survival is achieved by defeating the threat, avoiding acquisition and attack, and minimizing vulnerability. According to BMV engineers the International Turret, designed for rapid installation on the M109 chassis, provides the field artillery with a possible quantum jump in these capabilities.

The International Turret is armed with a 155-mm cannon capable of delivering all modern ammunition. The system's range of almost 40 kilometers not only allows delivery of effective counterbattery fire deep into enemy territory but also makes maneuver by fire a realizable tactic. The turret is fitted with a semiautomatic loader which is capable of supporting a rate of fire of eight rounds per minute and a burst rate of three rounds in 15 seconds.

To avoid acquisition and attack, the International Turret features a fully integrated C³ system including a position location and gun pointing system and, if desired, a full-solution technical fire control computer.

To minimize vulnerability, Kevlar laminates are used to enhance crew protection from fragmentation. In addition, a full-width propellant storage bustle creates a crew-safe environment in case on-board powder stores are ignited by enemy attack. The bustle stores 36 propelling charges in individual storage tubes. Should the enemy ignite one or more charges, the explosive force will be vented away from the crew compartment. This unique design of the storage tubes also deters the ignition of neighboring propellant charges.

January-February 1985



Ammunition loading system for the International Turret. (Emerson Electric Company photo)

The long gun tube, self-obturating breech mechanism with automatic primer feed is ballistically similar to the tubes used on the M109, M198, and FH/SP70 howitzers. The full range of standardized 155-mm ammunition including illumination, smoke, high-explosive, and bomblet rounds may be used.



A new bulldozer blade kit is being tested for the M1 Abrams tank. It is mounted on the lifting eyes and towing lugs of the tank and is powered by the tank's electrical system. The new kit would use moldboard geometry to improve driver vision and system performance and to take advantage of the lower profile of the M1 tank. The blade would be capable of clearing debris and rubble, as well as improving defensive fighting positions and breaching obstacles.

RED THRUST

RED THRUST, located at Fort Hood, Texas, is the US Army Forces Command Opposing Force (OPFOR) Training Detachment. RED THRUST provides OPFOR training support to Active and Reserve Component units, assists units in developing an effective and realistic OPFOR training program, and provides training to enhance the individual soldier's understanding of a potential adversary. Significantly, this training does not cost the unit anything in terms of TDY expense because RED THRUST pays its own costs.

RED THRUST has two mobile training teams (MTTs), which are composed of Field Artillery, Infantry, Armor, Air Defense, and Engineer commissioned and noncommissioned officers. The personnel on these two teams are trained specifically to teach combat platoons, batteries, and battalions how to operate as an opposing force in support of another unit's ARTEP or maneuver training.

Since its activation in 1977, RED THRUST has trained many US units to replicate the appearance and tactics of a Soviet-style opposing force maneuver unit. These trained units have provided other US units with a realistic opponent during field training exercises. Initially, RED THRUST trained the two maneuver battalions of the 7th Infantry Division that now comprise the highly proficient OPFOR 32d Guards Motorized Rifle Regiment at the Fort Irwin National Training Center. Other units trained by the detachment include companies, battalions, and squadrons of the 1st Infantry Division, 1st Cavalry Division, 2d Armored Division, 4th Infantry Division, 197th Infantry Brigade, 3d Armored Cavalry Regiment, Armor School, Arkansas National Guard's 39th Infantry Brigade, and Pennsylvania National Guard's 28th Infantry Division.

The detachment also has a series of 14 unclassified classes, complete with script and 35-mm slides, which can be borrowed by units up to 30 days. These 14 classes on Soviet operations are:

- Offensive tactics.
- Defensive tactics.
- Air defense.
- Airborne threat.
- Organization and equipment.
- Airpower.
- Threat to the NATO rear areas.
- Naval threat.
- Naval infantry.
- NBC warfare.
- River crossing operations.
- Artillery operations.
- Northern operations and capabilities.
- Behind the Soviet war machine.

Many units have used these classes to satisfy threat training objectives and to provide knowledge and visibility to junior leaders who are selected to present the instruction within the unit.

Other training support services provided by the detachment include a quarterly newsletter, the *RED THRUST Star*; an information packet of OPFOR reference material; and a slide

duplication service from a library of over 7,200 35-mm slides covering Soviet topics and equipment. These services are available to CONUS units upon request. The detachment also assists units with battle scenarios and provides answers to specific questions. Units wishing assistance should call AUTOVON 737-1725/4171 or write to:

Commander
US Army FORSCOM OPFOR Training
Detachment (RED THRUST)
P.O. Box 5068
Fort Hood, TX 76544-0056

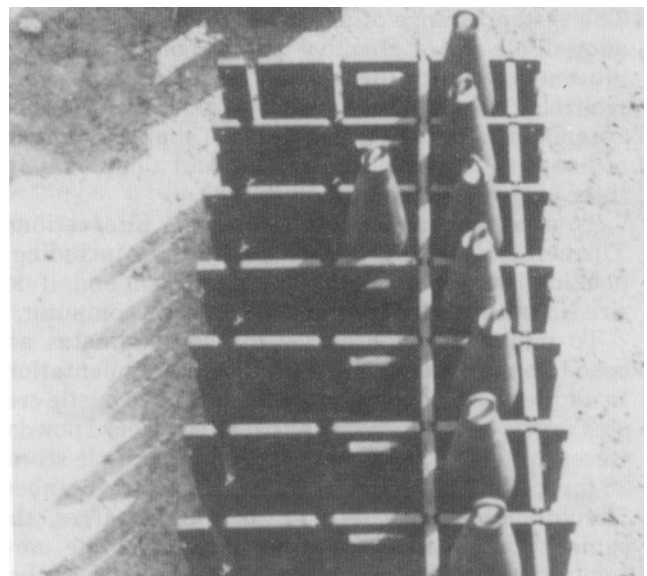
Egg crates

The "egg crates" discussed here are not for eggs; rather, they are used to transport rounds of ammunition that have already been unpacked from their rigid wooden pallets. "Egg crates" are interlocking sections of sturdy plastic that can be pieced together in the back of a truck to secure ammunition rounds—fuzed or unfuzed—so that they can be transported safely and be readily available for firing.

Not only are these ammunition racks low in cost and simple in design, but they solve a pressing problem: securing ammunition during movements. The weight and shape of projectiles normally prevents their being stacked tightly enough to fill a truck bed and makes it difficult to secure them. In a moving truck, the loose shells fall over on their sides and roll and bounce around. Such treatment can damage the shells and can affect the accuracy of the round when it is fired.

The plastic sections of the "egg crate" ammunition racks are interlocked, a panel at a time, as the individual round is slid into each slot. Normally two trucks are required to deliver both the shells and the necessary propellant charges to a given point, but the cans of propellant charges can be stacked on top of the assembled racks and be carried along with the projectiles.

The racks will be sent to several units for evaluation before the "egg crates" are fielded.



In this partially loaded unit, longitudinal pieces have been added after the initial row is filled with projectiles.



The small unit support vehicle shown here belongs to the 1st Battalion, 37th Field Artillery, and is pulling a 105-mm howitzer, the unit's primary weapon system.

Small unit support vehicle

FORT RICHARDSON, AK—The Army recently purchased 257 small unit support vehicles (SUSVs.) for use by Active and National Guard units in Alaska.

The small unit support vehicle is a lightweight (9,790 pounds) track-laying conveyance which is designed for platoon-sized units in northern and mountainous regions. The vehicle can be used to carry selected items of equipment, ammunition, and supplies. It can transport 17 fully-equipped soldiers or 4,190 pounds of supplies plus the driver. Or it can be used to evacuate injured personnel, tow one or two 10-man ski patrols, or pull light weapons such as 105-mm howitzers.

Each SUSV is composed of two fiber-glass plastic reinforced bodies mounted atop track-driven sections that are joined by an articulated steering unit. Each of the two tracks on both sections is power-driven. The SUSV can travel 25 miles per hour up to a range of 200 miles depending on the terrain. It can negotiate 31-degree hard-surfaced grades, 17-degree grades in deep snow, and when traveling across the side of a slope can traverse grades of about 40 degrees. It is powered by a four-stroke, in-line, 5-cylinder diesel engine, which has an average fuel consumption rate of four miles per gallon. The vehicle measures 22 1/2 feet long; 6 feet, 1 inch wide; and 7 feet, 9 inches high. Tests on the first two SUSVs at Fort Greely, Alaska, showed that the vehicle can start and operate at temperatures as low as minus 50 degrees Fahrenheit.



The first of a new generation of OH-58 Kiowa helicopters arrives at Yuma Proving Ground for Army helicopter Improvement Program (AHIP) testing. Designs and specifications drawn up by the Army Aviation Systems Command require a modification to the underpowered OH-58A that will result in a low cost, high technology scout helicopter. The improved helicopter will be a faster, longer-range, and more versatile aircraft which can be further modified to accept air-to-air or air-to-ground missiles.